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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/745,780	12/21/2000	Martin C. Roberts	303.451US6	3144

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EXAMINER	
BEREZNY, NEAL	
ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 06/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/745,780	TANG ET AL.	
	Examiner	Art Unit	
	Neal Berezny	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 March 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *38-52,54-59 and 62-79* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *38-52,54-59 and 62-79* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *04 March 2002* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *10* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 38-52, 54-59, and 62-79 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 5,923,584. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would been obvious at the time of applicant's invention to one of ordinary skill in the art to employ the well known practice of employing resist to form a pattern and it would also be obvious at the time of applicant's invention to one of ordinary skill in the art to form a silicide composed of Ti, in which it is obvious at the time of applicant's invention to one of ordinary skill in the art that Ti silicide can be used as an etch stop material against a silicon etch. Further, it is well known in the art and would be obvious to employ an etch stop layer in an etch-back planarization process, as recited, as part of a conventional multilevel interconnect process to enable formation of interconnects and bond pads necessary to incorporate

the disclosed device in an integrated circuit. It is well known to employ an etch stop over a structure that one would like to protect during an etching process so as not to overetch the structure, causing it damage. In addition, the use of photoresist is well known in the art as a means of patterning structures in the semiconductor industry and would be obvious to form the resist, as recited, as part of a conventional multilevel interconnect process to enable formation of interconnects and bond pads necessary to incorporate the disclosed device in an integrated circuit.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 38-52, 54-59, and 62-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nihira et al. (4,908,324). Nihira teaches forming first and second sections on a substrate, fig.8f, el.3 and 5, first and second Si plugs extending vertically, el.11, a field oxide in the second section, el.5, a first poly over the field oxide and portions over which the structure formed could be labeled, as recited in claim 40, for example, as consisting of "at least a portion of the second region", a second poly over the first poly and the first region, col.5, ln.61-67, forming no horizontal, but only vertical interfaces between the two poly structures, a gate oxide, el.6, patterning the plug

region, col.5, ln.47-52, the second poly removed over the first poly, el.9 and 11, and doping the first and second poly structures, col.6, ln.4-6.

5. Nihira appears not to specify the use of resist over the poly plug, nor the use of As for doping the poly layers. Official notice is given that the use of photoresist is well known in the art as a means of patterning structures in the semiconductor industry and would be obvious to form the resist, as recited, as part of a conventional multilevel interconnect process to enable formation of interconnects and bond pads necessary to incorporate the disclosed device in an integrated circuit. Official notice is also given that As is well known as a dopant and it would be obvious to switch the dopant types of the structure to provide greater process and device latitude. Further is would be obvious and is well known to use As as an N-type dopant.

6. Nihira appears not to employ the use of an etch stop over the first poly. Official notice is given that it is well known in the art and would be obvious to employ an etch stop layer in an etch-back planarization process, as recited, as part of a conventional multilevel interconnect process to enable formation of interconnects and bond pads necessary to incorporate the disclosed device in an integrated circuit. It is well known to employ an etch stop over a structure that one would like to protect during an etching process so as not to overetch the structure, causing it damage. Further, the use of Ti silicide as an etch stop material is also well known in the art and would be obvious to use in a conductive poly structure in order to both stop an etch and to further increase the conductivity of the structure.

Response to Arguments

7. Applicant's arguments filed 3/4/02 have been fully considered but they are not persuasive. Applicant appears to be arguing that if a reference lacks certain elements, even if they are obvious and well known in the art, then a prima facie case cannot be made. This thinking is contrary to the intent and purpose of an obvious type 103 rejection. Applicant also raises an issue that the claimed invention must be taken as a whole, but when the missing elements are well known such as the use of photoresist for the purpose of patterning, "the whole" is not intended to include mundane, commonly known aspects of the technology, but rather "the whole" of the invention relates to the critical aspects of the invention that sets it apart from the prior art. If applicant feels that these elements are in fact critical to the invention then applicant also has the burden of demonstrating the criticality of the elements in order to satisfy the enablement requirement.

8. Applicant argues that Nihira does not show that the bottom of the first poly layer is higher than the field oxide. Applicant has misread Nihira, the first poly is el.9, not el.11, see fig.8e. In fig.8f, the first poly, el.9, is completely above the field oxide, el.5.

9. Applicant has challenged examiner's taking of official notice and asked for references. Schrantz et al. (5,683,939) teaches the use of photoresist for patterning, col.3, ln.21-22, and the use of an etch stop for stopping an etchant, col.3, ln.22-25. Schrantz also teaches the use of an etch stop in an etch-back planarization process, col.3, ln.32-42. Kosa et al. (5,416,736) teaches the use of titanium silicide as an etch stop layer, col.10, ln.42-44. Finally, Shibib (5,541,429) teaches that arsenic is used to

dope polysilicon to form a conducting material and could be switched with other dopants, col.5, ln.52-55, and col.1, ln.38.

10. Applicant makes an assertion that the frequent use of "Official Notice" suggests non-obviousness. Applicant is requested to supply evidence in the MPEP to support such an assertion. The MPEP contains no limitation to the number of official notice citings Frequent use of well know and obvious limitations could be a testimonial to many different scenarios having nothing to do with the obviousness of the claimed invention and is actually more likely to suggest the lack of novelty in the critical aspects of the claimed invention.

CONCLUSION

11. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Neal Berezny whose telephone number is (703) 305-1481. The examiner can normally be reached on Monday to Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached at (703) 308-4918. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

George Fourson
Primary Examiner
2823

5-20-02

Neal Berezny

Patent Examiner

Art Unit 2823